METHOD AND APPARATUS FOR CHARACTERIZING MATERIALS BY USING A MECHANICAL RESONATOR

DO NOT ENTER
4/13/05

CLAIM OF PRIORITY

[0001] This application is a continuation of 10/266,047, filed on October 7, 2002, which is a continuation of 10/201,181, filed on July 23, 2002, which is a continuation of 09/800,819, filed on March 7, 2001, now U.S. Patent No. 6,494,079, which is a divisional of 09/133,171, filed on August 12, 1998, now U.S. Patent No. 6,393,895, which is a CIP of 08/946,921, filed October 8, 1997, now U.S. Patent No. 6,182,499.

TECHNICAL FIELD

[0002] The present invention is directed to using mechanical oscillators for measuring various properties of fluids (including both liquids and vapors), and more particularly to a method and system using a mechanical oscillator (resonator) for measuring physical, electrical and/or chemical properties of a fluid based on the resonator's response in the fluid to a variable frequency input signal.

BACKGROUND ART

[0003] Companies are turning to combinatorial chemistry techniques for developing new compounds having novel physical and chemical properties. Combinatorial chemistry involves creating a large number of chemical compounds by reacting a known set of starting chemicals in all possible combinations and then analyzing the properties of each compound systematically to locate compounds having specific desired properties. See, for example, U.S. patent application Ser. No. 08/327,513 (published as WO 96/11878), filed Oct. 18, 1994, entitled "The Combinatorial Synthesis of Novel Materials", the disclosure of which is incorporated by reference.

[0004] The virtually endless number of possible compounds that can be created from the Periodic Table of Elements requires a systematic approach to the synthesizing and screening processes. Thus, any system that can analyze each compound's properties quickly and accurately is highly desirable. Further, such a system would be useful in any application requiring quick, accurate measurement of a liquid's properties, such as in-line measurement of additive concentrations in gasoline flowing through a conduit or